

WHAT IS CLAIMED IS:

1. An organic electroluminescent element comprising:
a pair of electrodes; and

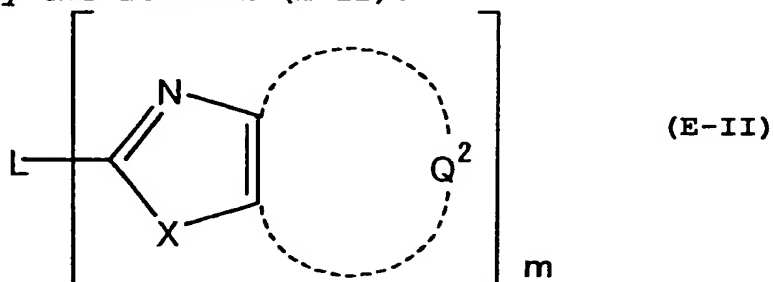
an organic layer between the pair of electrodes, the
5 organic layer comprising a light-emitting layer and an electron
transporting layer,

wherein the light-emitting layer contains at least one
phosphorescence-emitting material and at least one metal
complex functioning as a host material, and the electron
10 transporting layer contains a compound represented by the
formula (E-I):



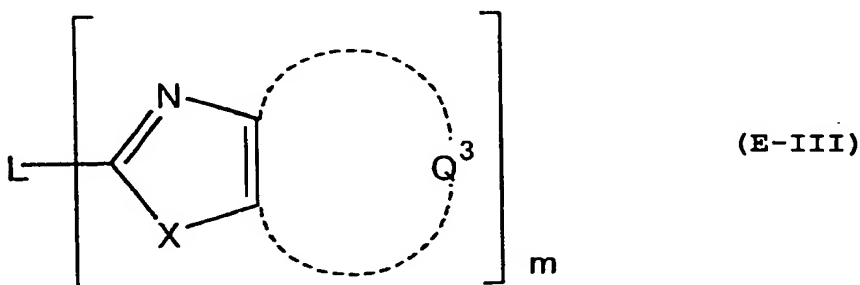
wherein A represents a monovalent heterocyclic group
15 wherein two or more aromatic hetero rings are condensed, the
heterocyclic groups represented by A is the same or different
from each other, m represents an integer of 2 or more, and L
represents an m-valent linking group.

- 20 2. The organic electroluminescent element according to
claim 1, wherein the compound of the formula (E-I) is a compound
represented by the formula (E-II):



wherein X represents O, S, Se, Te or N-R, R represents a hydrogen atom, an aliphatic hydrocarbon group, an aryl group or a heterocyclic group, Q^2 represents atoms necessary for forming an aromatic hetero ring, m represents an integer of 2 or more, and L represents an m-valent linking group.

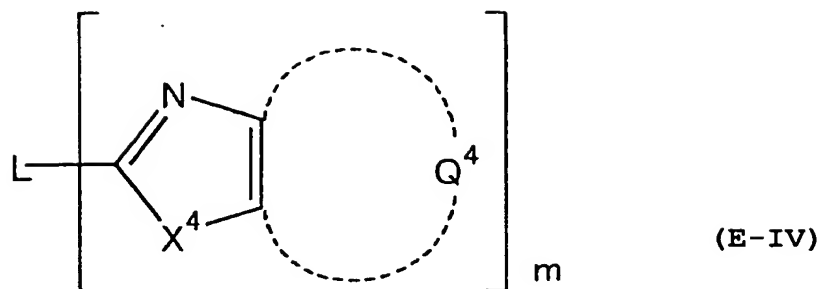
3. The organic electroluminescent element according to claim 1, wherein the compound of the formula (E-I) is a compound represented by the formula (E-III):



15 wherein X represents O, S, Se, Te or N-R, R represents a hydrogen atom, an aliphatic hydrocarbon group, an aryl group or a heterocyclic group, Q^3 represents atoms necessary for forming a nitrogen-containing aromatic hetero ring, m represents an integer of 2 or more, and L represents an m-valent
20 linking group.

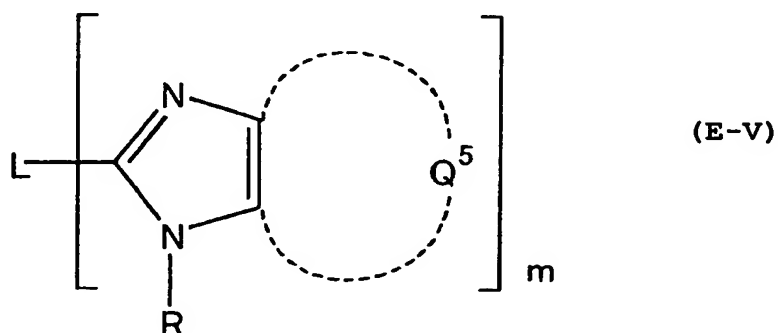
4. The organic electroluminescent element according to claim 1, wherein the compound of the formula (E-I) is a compound represented by the formula (E-IV):

25



5 wherein X^4 represents O, S or N-R, R represents a hydrogen atom, an aliphatic hydrocarbon group, an aryl group or a heterocyclic group, Q^4 represents atoms necessary for forming a 6-membered, nitrogen-containing aromatic hetero ring, m represents an integer of 2 to 8, and L represents an m-valent
 10 linking group.

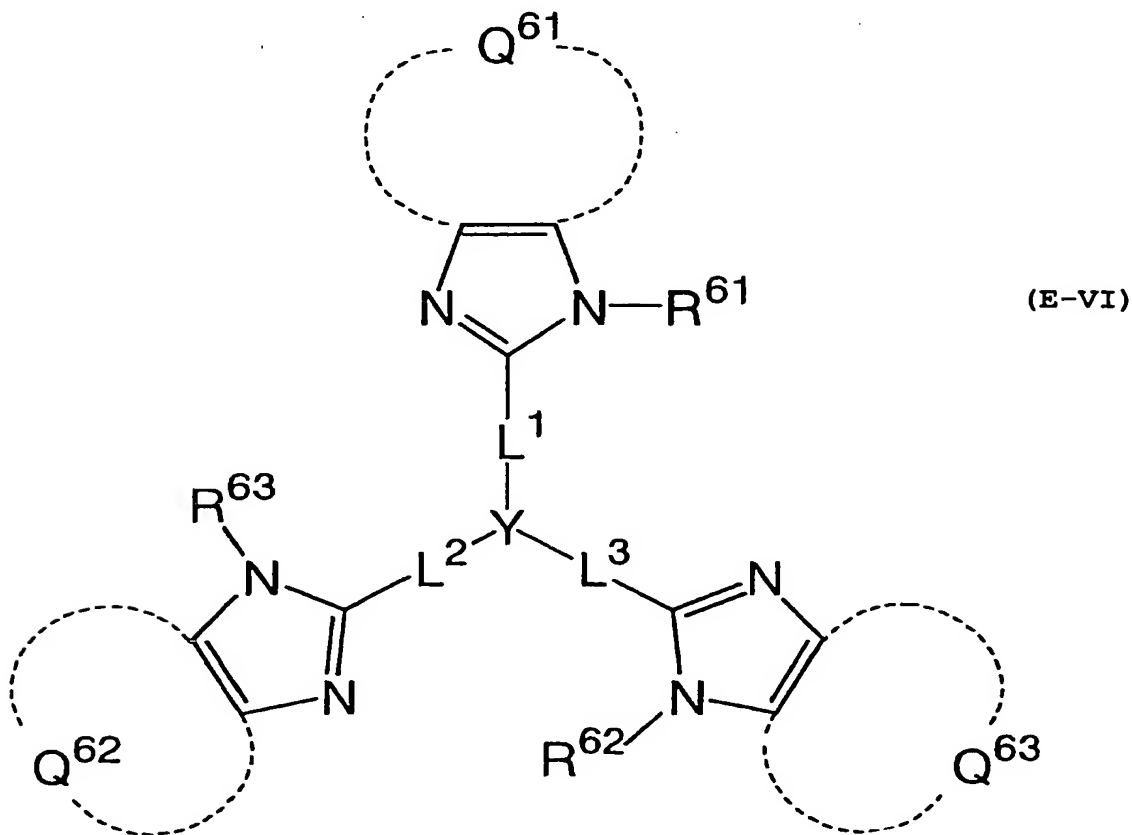
5. The organic electroluminescent element according to claim 1, wherein the compound of the formula (E-I) is a compound represented by the formula (E-V):



 wherein R represents a hydrogen atom, an aliphatic hydrocarbon group, an aryl group or a heterocyclic group, Q^5 represents atoms necessary for forming a 6-membered, nitrogen-containing aromatic hetero ring, m represents an
 25 integer of from 2 to 8, and L represents an m-valent linking

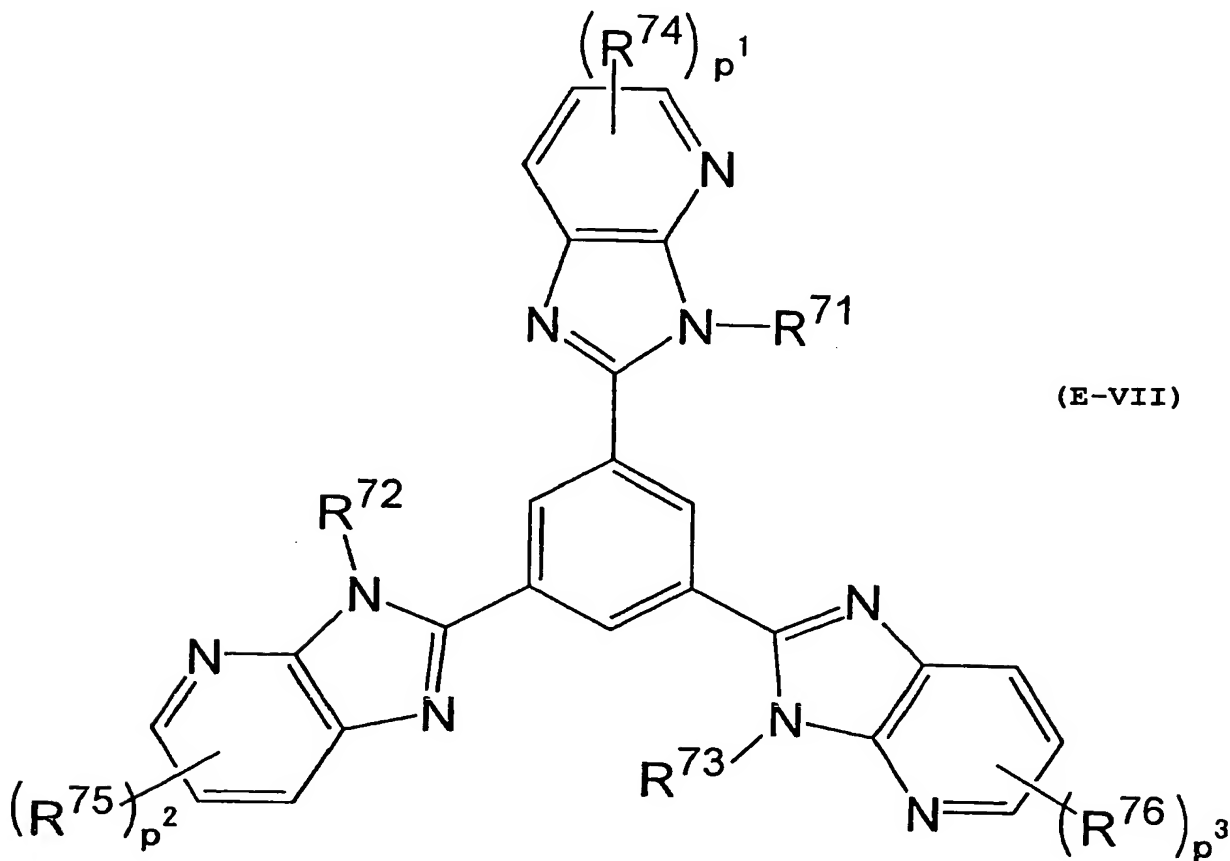
group.

6. The organic electroluminescent element according to claim 1, wherein the compound of the formula (E-I) is a compound represented by the formula (E-VI):



wherein Q^{61} , Q^{62} and Q^{63} each independently represents atoms necessary for forming a 6-membered, nitrogen-containing aromatic hetero ring, R^{61} , R^{62} and R^{63} each independently represents a hydrogen atom, an aliphatic hydrocarbon group, an aryl group or a heterocyclic group, L^1 , L^2 and L^3 each independently represents a divalent linking group, and Y represents a nitrogen atom or a 1,3,5-benzenetriyl group.

7. The organic electroluminescent element according to claim 1, wherein the compound of the formula (E-I) is a compound represented by the formula (E-VII):

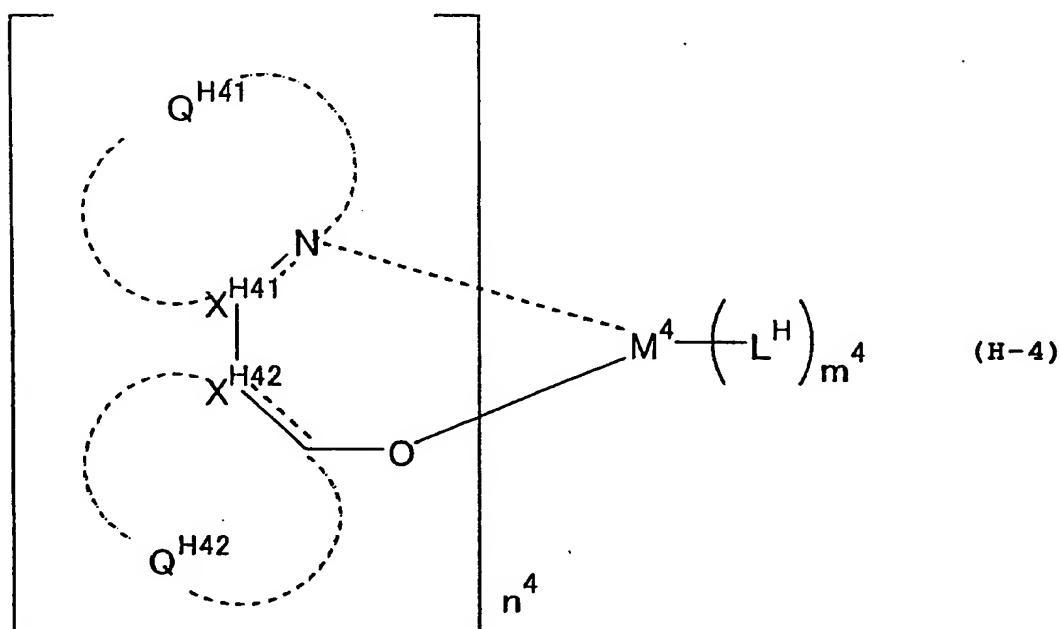


wherein R^{71} , R^{72} and R^{73} each independently represents a
 20 hydrogen atom, an aliphatic hydrocarbon group, an aryl group
 or a heterocyclic group, R^{74} , R^{75} and R^{76} each independently
 represents a substituent, and p^1 , p^2 and p^3 each represents an
 integer of 0 to 3.

25 8. The organic electroluminescent element according to

claim 1, wherein the light-emitting layer is provided directly on the electron transporting layer.

9. The organic electroluminescent element according to claim 1, wherein the metal complex is represented by the formula (H-4) :



wherein $\text{X}^{\text{H}41}$ and $\text{X}^{\text{H}42}$ each independently represents a carbon atom or a nitrogen atom, the bond between $\text{X}^{\text{H}41}$ and the nitrogen atom and the bond between $\text{X}^{\text{H}42}$ and the carbon atom each independently represents a single bond or a double bond, $\text{Q}^{\text{H}41}$ and $\text{Q}^{\text{H}42}$ each independently represents atoms necessary for forming a 5- or 6-membered ring, M^4 represents a metal ion, n^4 represents an integer of 1 or more, L^{H} represents a ligand, and m^4 represents an integer of 0 or more.

10. The organic electroluminescent element according to claim 1, wherein the light-emitting layer contains from 50 to 99.9% by weight of the at least one metal complex.

5

11. The organic electroluminescent element according to claim 1, wherein the light-emitting layer contains from 60 to 99% by weight of the at least one metal complex.

10

12. The organic electroluminescent element according to claim 1, wherein the metal complex has a glass transition temperature of from 130 to 400 °C.

15

13. The organic electroluminescent element according to claim 1, wherein the metal complex is a complex of Li, Be, Na, Mg, Al, K, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga or Ge.

20

14. The organic electroluminescent element according to claim 1, wherein the metal complex is a complex of Li, Be, Na, Mg, Al, Ti, Fe, Co, Ni, Cu, Zn or Ga.

25

15. The organic electroluminescent element according to claim 1, wherein the metal complex is a complex of Be, Mg, Al, Fe, Ni, Cu, Zn or Ga.

16. The organic electroluminescent element according to claim 1, wherein the metal complex is a complex of Be, Mg, Al, Cu, Zn or Ga.

5

17. The organic electroluminescent element according to claim 1, wherein the metal complex is a complex of Al or Zn.

10

18. The organic electroluminescent element according to claim 1, wherein the phosphorescence-emitting material is a complex of iridium, platinum, rhenium or ruthenium.

15

19. The organic electroluminescent element according to claim 1, wherein the phosphorescence-emitting material is a complex of iridium or platinum.

20

20. The organic electroluminescent element according to claim 1, wherein the phosphorescence-emitting material is a complex of iridium.